

# Notice of Allowability

Application No.

10/674,249

Examiner

Michael W. Talbot

Applicant(s)

MIKIYA ET AL.

Art Unit

3722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 15 March 2006.
2. ☒ The allowed claim(s) is/are 1,3-15 and 17-23.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 03/06/15/31/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 05/25/06
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Amir Penn on Thursday, 25May 2006.

The application has been amended as follows:

**Claims:**

(1) Included the limitations of dependent claim 2 into independent claim 1.

Claim 1 now read as follows:

An electric drill apparatus having a low profile, comprising:

an annular cutter for cutting at a high rotational speed, and having a plurality of cutting blades comprised of cemented carbide tips fixed on its lower end,

a motor for rotating at a high speed suitable for a cutting operation of the annular cutter with the cemented carbide tips;

a rotary shaft assembly for rotating the annular cutter attached to its leading end about an axis, the direction of which is different from that of an axis of a rotating shaft of the motor;

a rotation reduction mechanism disposed between the motor and rotary shaft assembly for transmitting a driving force of the motor to the annular cutter through the rotary shaft assembly;

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a feed mechanism responsive to an operation of a manual handle, for moving the rotary shaft assembly along with a straight line to advance or retract the annular cutter attached to the rotary shaft assembly with respect to a work piece;

an adhesion base disposed below a body of the electric drill apparatus for securing the electric drill apparatus to the work piece; and

an automatic motor stopping/re-driving mechanism comprising:

a main switching element connected in series between the motor and a power supply;

a current detector for detecting a load current flowing through the motor;

a determination unit for determining whether the load current detected by the current detector exceeds a first predetermined reference value; and

a control unit for controlling the main switching element to turn on/off, wherein when the determination unit determines that the load current exceeds the first reference value, the control unit turns off the main switching element to shut off the current flowing through the motor, and subsequently when the determination unit determines that the load current decreases to be smaller than the first reference value, the control unit turns on the main switching element at a predetermined time after the determination, to supply the current from the power supply to the motor.

(2) deleted claim 2 in its entirety;

(3) deleted claim 16 in its entirety; and

(4) Claim 18, line 18, the character reference "first switching transistor" has been changed so as to read --first switch--.

***Allowable Subject Matter***

1. The following is an examiner's statement of reasons for allowance:

Claims 1,3-15 and 17-23 are allowed.

Claims 1,5,14 and 18 are the independent claims.

For claim 1, the prior art of record fails to anticipate or make obvious "a control unit for controlling a main switching element to turn on/off, wherein when a determination unit determines that a load current exceeds a first reference value, the control unit turns off the main switching element to shut off the load current flowing through a motor, and subsequently when the determination unit determines that the load current decreases to be smaller than the first reference value, the control unit turns on the main switching element after awaiting at least a predetermined time after the determination, to supply current from the power supply to the motor" in working combination with a motor for rotating an annular cutter, a rotary shaft assembly, a rotation reduction mechanism, a feed mechanism, an adhesion base, a main switching element, a current detector and a determination unit.

For claim 5, the prior art of record fails to anticipate or make obvious "a control unit for controlling a main switching element to turn on/off, wherein when a determination unit determines that a load current exceeds a first reference value, the control unit turns off the main switching element to shut off the load current flowing through a motor, and subsequently when the determination unit determines that the load current decreases to be smaller than the first reference value, the control unit turns on the main switching element only after awaiting at least a predetermined time after the determination, to supply current from the power supply to the motor" in working combination with a motor for rotating an annular cutter, a rotary shaft assembly, a feed mechanism, a main switching element, a current detector and a determination unit.

For claim 14, the prior art of record fails to anticipate or make obvious “a control unit for controlling a main switching element to turn on/off, wherein when a determination unit determines a first condition is met, the control unit turns off the main switching element to shut off the load current flowing through a motor, and subsequently when the determination unit determines a second condition is met, the control unit turns on the main switching element after awaiting at least a predetermined time after the determination, to supply current from the power supply to the motor” in working combination with a motor for rotating an annular cutter, a main switching element, a current detector and a determination unit.

For claim 18, the prior art of record fails to anticipate or make obvious “a control unit for controlling a main switching element to turn on/off, wherein when a determination unit determines that a load current exceeds a reference value to turn off the electric drill, the control unit turns off the main switching element to shut off the load current flowing through a motor, and subsequently when the determination unit determines that the load current decreases to be smaller than the reference value to turn on the electric drill, the control unit turns on the main switching element after awaiting at least a predetermined time after the determination, to supply current from the power supply to the motor” wherein the control unit further comprises an on-state self hold unit with a first switch, a photodiode, a second switch and a unit in working combination with a motor for rotating an annular cutter, a main switching element, a current detector and a determination unit.

Gill '123 and Shoji et al. '006 are the closest art of record.

Gill '123 shows in Figures 1-7 a low profile electric drill (10) having an annular cutter (18) with a plurality of cutting blades (200), a motor (14) for rotating at a high speed, a rotary shaft assembly (16) for rotating the annular cutter having its axis (A) substantially perpendicular from the axis (B) of the rotating shaft of the motor, a feed mechanism (72,80) incorporating a handle

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(100) for translating the rotary shaft assembly up and down along its axis and a magnetic base (20) for securing the electric drill to the work piece.

Shoji et al. '006 further shows in Figures 1-4 an electric drill (3) having a motor (3'), a main switch (9) connected in series between the motor and a power supply (8), a current detector (10) for detecting a load current through the motor, a determination unit (15) for determining if the load current exceeds a first reference value and a control unit (16) for shutting off the current through the motor if the load current exceeds a first reference value, and subsequently supplying current to the motor if the load current decreases below the first reference value. Shoji et al. '006 further shows a second determination unit (12) for determining if the load current exceeds a second reference value and a load current indication unit (13,14) for shutting off the current through the motor if the load current exceeds a first reference value, and subsequently supplying current to the motor if the load current decreases below the first reference value. Shoji et al. '006 shows the current detector outputs a voltage corresponding to the load current and the determination unit receives and compares the voltage to a first reference value to determine whether the load current exceeds the first reference value (col. 4, lines 51-68 and col. 5, lines 1-21). Shoji et al. '006 shows the current detector outputs a voltage corresponding to the load current and the second determination unit receives and compares the voltage to a second reference value to determine whether the load current exceeds the second reference value (col. 5, lines 29-68 and col. 6, line 1). Shoji et al. '006 shows the control unit comprises an on-state self hold unit (SCR) for holding a first switch element in an on-state when a starting switch is turned on, a control signal supply unit for supplying an on-control signal for turning on the main switch element when the first switch element is in the on-state, a second switch which turns on when the first determination unit determines that the load current exceeds

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a first reference value and a unit for turning off the second switch when the load current falls below the first reference value (col. 5, lines 35-58).

In conclusion, both Gill '123 and Shoji et al. '006 fail to anticipate or make obvious, solely or in combination, the specific claim limitation reciting "waiting a predetermined time after a determination that a load current meets a second condition and/or is smaller than a reference value", before supplying current from the power supply to the motor.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

2. Any inquiry concerning the content of this communication from the examiner should be directed to Michael W. Talbot, whose telephone number is 571-272-4481. The examiner's office hours are typically 8:30am until 5:00pm, Monday through Friday. The examiner's supervisor, Mrs. Monica S. Carter, may be reached at 571-272-4475.

In order to reduce pendency and avoid potential delays, group 3720 is encouraging FAXing of responses to Office Actions directly into the Group at FAX number 571-273-8300. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers, which require a fee, by applicants who authorize charges to a USPTO deposit account. Please identify Examiner Michael W. Talbot of Art Unit 3722 at the top of your cover sheet.



MWT  
Examiner  
25 May 2006



MONICA CARTER  
SUPERVISORY PATENT EXAMINER